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Figure 1 Airway ciliated cells and goblet cells observed with scanning electron microscope. Ciliates on the surface of ciliated cell and secreted mucin from the goblet cells are clearly shown.

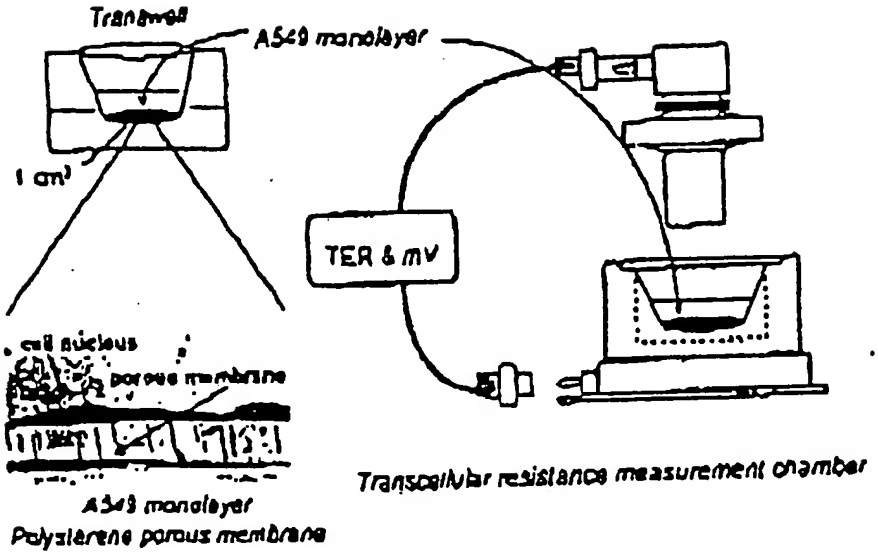

Figure 2 Airway epithelial cells in air-liquid interface and measuring device for their physiological properties (i.e. ransepithelial electrical resistance).

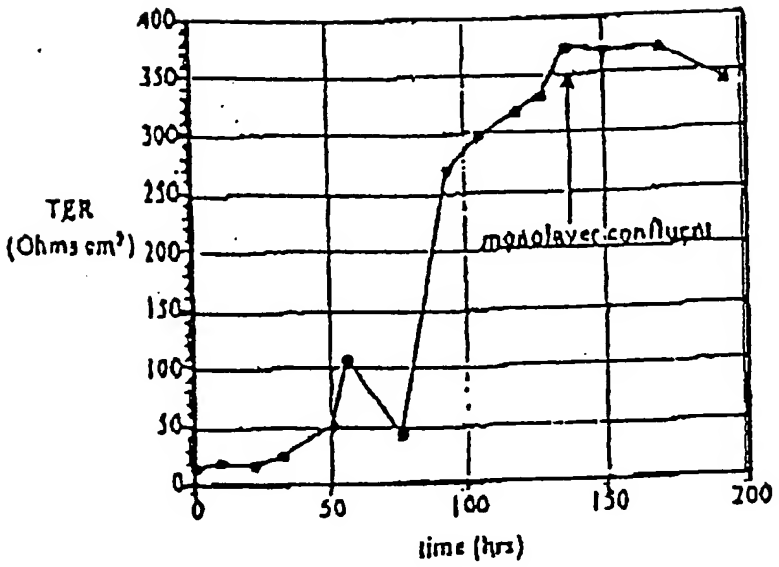

Figure 3 Transepithelial electrical resistance (Ohms·cm^2) across a monolayer of A549 cells grown on polyester membrane support.

Figure 4 Quinacrine stain was accumulated specifically inside mucin secretory granules of the airway goblet cells. Cells were stained in 100 µM quinacrine for 5 minutes.

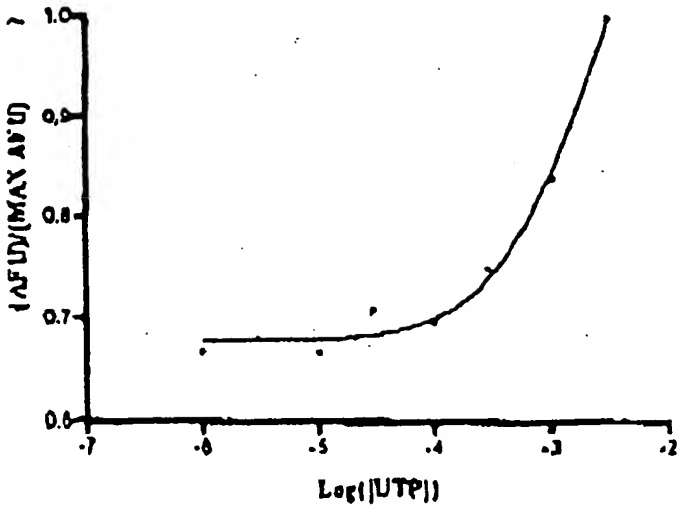

Figure 5 The concentration-dependence of UTP-induced mucin exocytosis in normal tracheal goblet cells. The concentration-dependence curves were reproduced in triplicate. The secretion of mucin was monitored with quinacrine fluorescence. Data were fit as a sigmoidal dose-response.

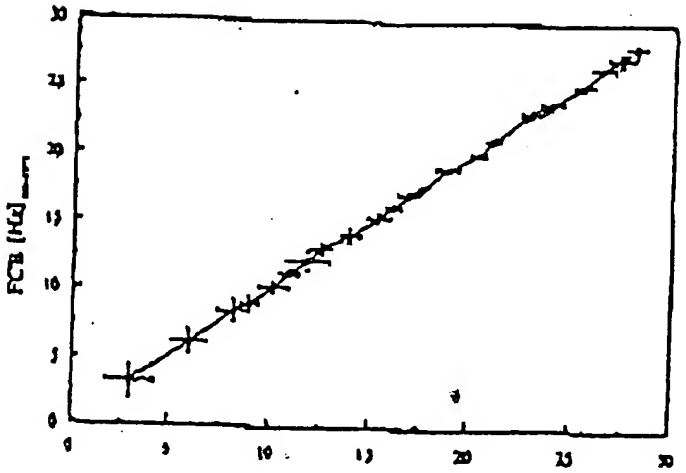

Figure 6 Ciliary beating frequency (CBF) calibration curve. The results from our CBF measurement system are similar to the results obtained from fast cinematography (standard method).

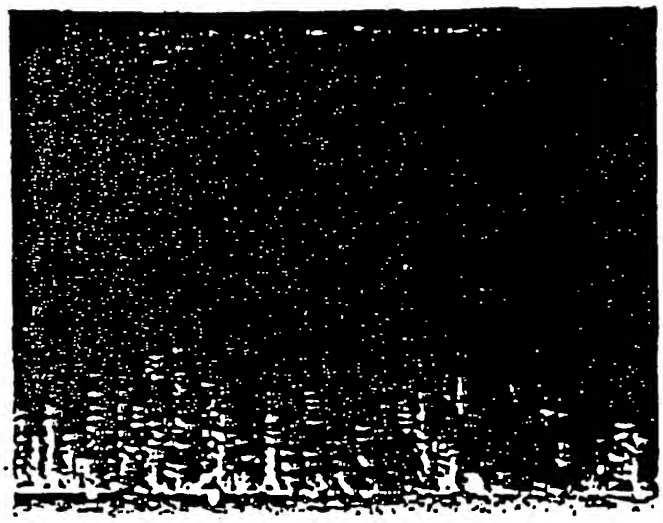

Figure 7 Cross-section SEM image of cylindrical nanopores formed p++ Si (Janshoff et al., 1998).

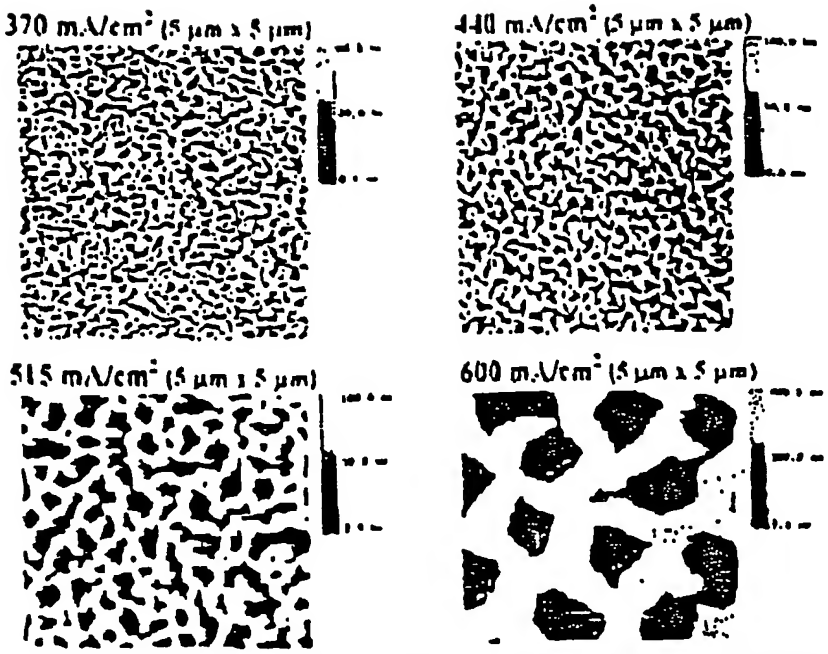

Figure 8 Porous size varies with applied current; p++ Si, HF (aq) : EtOH = 3: 1 (Janshoff et al., 1998).

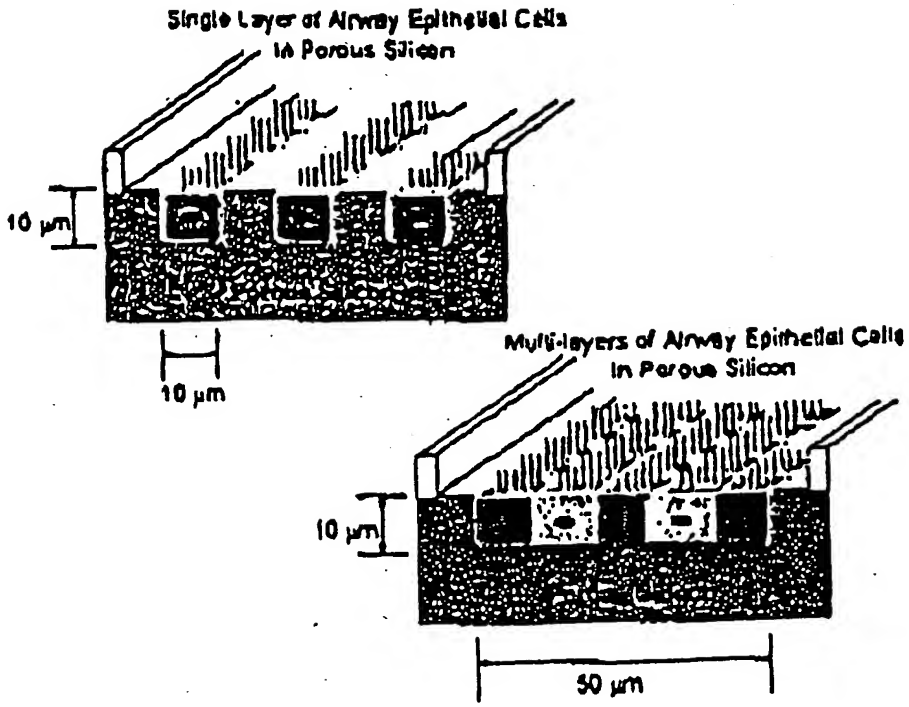

Figure 9 Patterned airway epithelial cell layers trapped on porous silicon support.

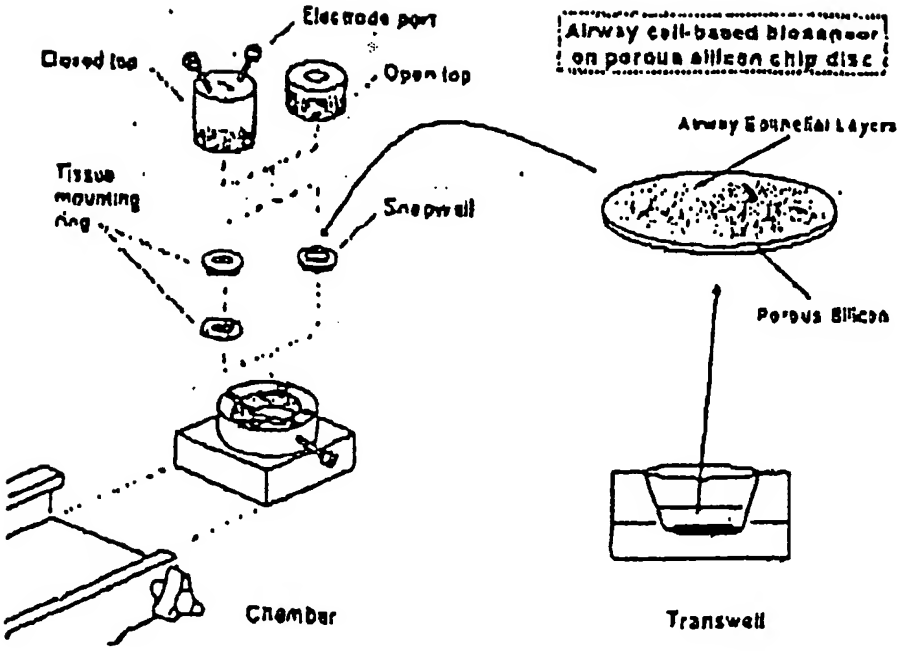

Figure 10 Schematic diagram for Incorporation of airway epithelial cell layers grown on porous silicon into microflujdic device or flow chamber.

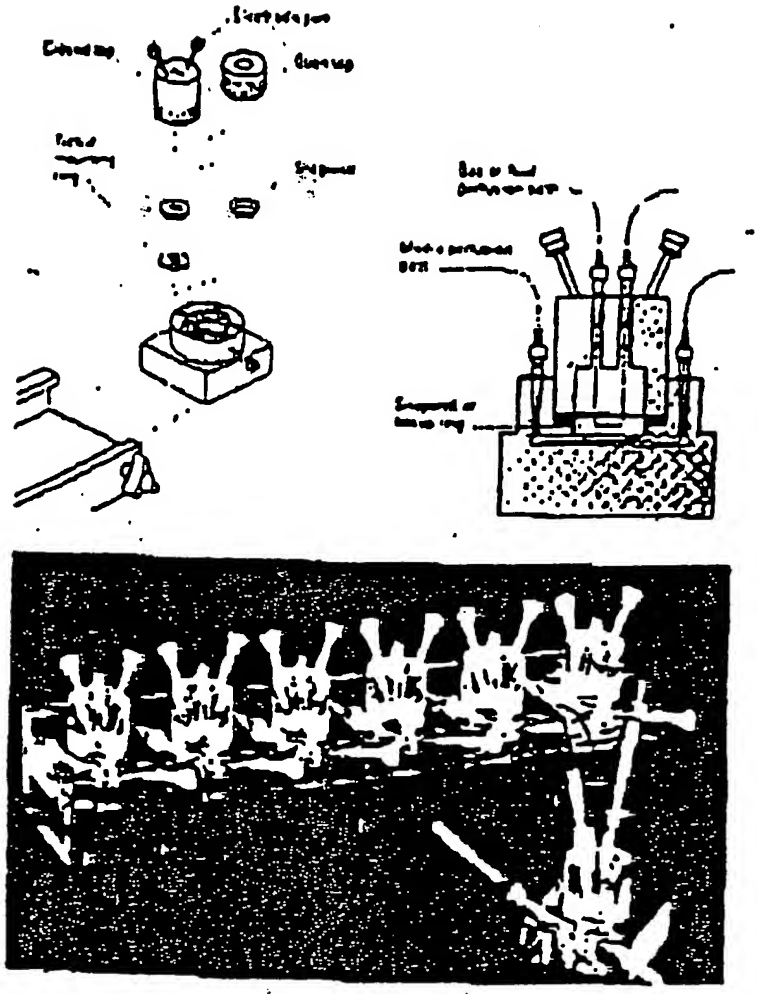

Figure 11 Physiological parameters sensing device. This device is composed of gas or fluid perfusion path, media perfusion path, Snapwell, and four electrodes (Harvard Apparatus, Holliston, MA).